



Environmental Stewardship's Quarterly

Pollution Prevention Reporter

"Stewardship through environmentally conscious practices"

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Waste Minimization/Pollution Prevention (Wmin/PP) Information

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Inside Story: Avoiding Tomorrow's Waste By Tom Baca, Program Director, Environmental Programs

In Sig's November 8 Inside Story he reiterated the Lab's commitment to achieving world class operations in a cost-effective manner.

Part of being world class is conducting environmentally responsible operations both as individual researchers and as a Laboratory. We do this by understanding the environmental impact of our activities and continually striving to minimize that impact. Our short-term goal is to operate in compliance with environmental laws and regulations. Our long-term goal is to go beyond compliance and apply best environmental practices in every operation. We must become stewards of our environment, both locally through how we conduct operations on site, and globally through products buy, the technologies

we develop, and the example we set.

My reason for writing this inside story is to address our need to reduce our waste. If we continue present practices, the Laboratory's Site-Wide Environmental Impact Statement estimates we will produce 100,000 cubic meters of radioactive and hazardous waste in the next ten years. This would be enough to fill the large parking lot in front of the Administration Building to a depth of 30 feet. If we add the 100,000 cubic meters of sanitary waste we will produce, the waste pile would be higher than the Administration building. We will spend over \$700 million dollars on disposal. Waste and its cost are a serious concern to DOE, EPA, the State, our neighbors, and us.

Since 1989 when our customer, DOE, began emphasizing environmental responsibility, we have made great strides reducing our waste. We have already achieved the waste minimization goals Secretary O'Leary set for 1999. Individual successes were recognized by the Lab's Waste Minimization Awards to 67 Lab employees and over \$800,000 in recently funded waste minimization Set-Aside projects. These and mission program waste avoidance investments indicate our continuing emphasis on waste minimization.

However, with the new Stockpile Stewardship and Management missions, the Accelerator Production of Tritium project, and increased activity in many continuing programs, our waste is projected to increase. I believe that we can go beyond the good plans and processes we have today. We can do even better. With better practices, better technology, and more efficient operation much of our next ten years' waste can be avoided.

Reducing waste increases productivity, especially if we apply our science and technology to develop no-waste processes. Companies like Dow Chemical, Dupont, and Monsanto include waste avoidance in their quality programs because every dollar of avoided waste cost becomes a dollar of profit. Our waste avoidance savings can be invested in R&D to strengthen our core competencies. Reducing waste reduces our vulnerability. There are a multiplicity of laws and regulations that govern how much waste we make, how we store it, how we move it, and how we document it. Minor mistakes can lead to findings and fines, and sometimes lawsuits and shutdowns. It is the waste, not the processes that produce it, that is subject to environmental laws and regulations. We avoid the regulatory requirements by not making the waste in the first place. Reducing waste also builds trust with our Northern New Mexico neighbors. At public meetings we explain that the scientific risk of burying our waste or shipping it to WIPP is small. We are often asked what if our science is incomplete and our risk analysis is wrong. Waste we do not make poses zero threat to the public!

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"Don't Forget to Recycle your Christmas Tree!"

The Environmental Programs Directorate recently established an Environmen-

tal Stewardship Office to launch a new campaign in waste minimization. I ask every program and technical division producing hazardous and radioactive waste to join with the Environmental Stewardship team in identifying cost effective waste minimization solutions and going forward to our DOE customers for support implementing those solutions.

One of our most important strengths as a Laboratory is our capability to safely and responsibly work with extremely hazardous and radioactive materials. Reducing our next ten years' waste generation will further enhance that capability, increasing our value to the nation.

Season's



Greetings

Reuse and Recycling Facts:

One Man's Trash Is Another's Gold
Recycling is the series of activities, including collection, separation, and processing, by which products or other materials are recovered from the solid waste stream for use as feed-stock in the manufacture of new products. We often call the final step to recycling "closing the loop." It includes the buying and using materials with recycle content.

Los Alamos National Laboratory's Solid Waste Program

The Lab's Solid Waste Program focuses on material reuse or recovery after all source reduction efforts have been exhausted. The Program supports off-site recycling of chemicals through acceptable chemical recycling vendors.

We address mission program reuse/recycling concerns, streamline existing processes, and define additional materials with cost-effective reuse/recycling potential. The Program also advertises existing recycling programs on the Laboratory's Recycling Web Page at <http://perseus.lanl.gov/PROJECTS/RECYCLE/>.

Off-Site Waste Recycling Options

The Laboratory supports diverting potentially hazardous materials to qualified off-site vendors that perform recycling rather than disposal services. Off-site recycling of RCRA materials include mercury light bulbs, flammable liquids, photo debris, rags for fuels burning, photo chemicals, copper chloride solution, ferric chloride, hydrogen chloride solution, acid with metals, and lead with sand. State-regulated materials may include ion exchange resins, oils and gas cylinders. TSCA-regulated materials may include PCB contaminated oils and rags used to augment combustion during PCB destruction.

Chemical Exchange Assistance Program and External Recycling - CHEAPER

CHEAPER is the formal program for the reuse of surplus chemicals by Laboratory personnel at no cost. The program handles all arrangements and costs for the transfer of chemicals to encourage exchanges. A searchable list of chemicals for exchange is available to all Laboratory personnel at <http://perseus.lanl.gov/PROJECTS/ACES>. A request for chemicals may be sent via e-mail to the program coordinator (stimmel@lanl.gov), or by calling (7-4932) directly.

The program is expanding to include other DOE facilities and entities such as State agencies and schools.

Solid Sanitary Waste Recycling Options and Solutions

Green clippings/composting

Any green plant or tree clipping can be composted. LANL delivers large amounts of this feedstock to the County landfill where they turn it into valu-

able lawn and garden soil enhancer. It saves resources because it is composted locally and does not have to be purchased.

Metals/scrap wire

Stainless steel, copper, iron, aluminum, lead, electric cable, tin, and brass are readily recycled through our support services contractor, Johnson Controls World Services, Inc. (JCI) by calling 7-2109 directly. Some metals, such as copper, aluminum, electrical cable, and brass yield high market prices. New segregation practices contained in Laboratory Procedure 107-04.1, "Releasing Materials and Equipment" are increasing the removal and release of metals from radioactive areas.

Construction debris

Concrete debris is the largest and most visible component of D&D activities. Of the concrete that LANL recycles, most is used as a roadway substrate or as clean fill around buildings.

Paper:

We can recycle most types of paper at the Laboratory. The key to recycling is collecting large quantities of clean, well-sorted, uncontaminated and dry paper.

:White ledger

The highest grade of paper is white office paper. Clean white sheets from laser printers and copy machines are acceptable. Dark colored, contaminated or lower grade paper is not acceptable. The wrapper that paper comes in is of lower grade, and not acceptable. Staples and post-its are OK. White office paper may be downgraded, and recycled with mixed paper when we mingle lower grade paper with white office paper.

:Mixed paper

Mixed paper is a catchall for types of paper. Everything you can imagine from magazines to packaging is acceptable. Staples are OK. This paper has little value and can be bundled and tied or put in paper grocery sacks for recycling by the Los Alamos County Landfill.



:Phone books

Phone books are accepted for recycling only during June when US West distributes new directories. U.S. West picks up the books for recycle at no cost or revenue to the Laboratory. Collection and pick up is advertised in the "What's Hot" section of the Recycling Homepage, and in the LANL Newsbulletin. After June you may still recycle your telephone books by taking them to any of several bins around Los Alamos. There is one across from Smith's in White Rock and one at the Sullivan Field parking lot across from the high school in Los Alamos.

:Paper that can't be recycled

Paper that can't be recycled as normal "mixed paper" includes: food contaminated paper, waxed paper, waxed cardboard milk & juice containers, oil soaked paper, carbon paper, sanitary products or tissues, thermal fax paper, stickers and plastic laminated paper such as fast food wrappers, juice boxes, and pet food bags.

Corrugated containers

Cardboard boxes are a valuable feedstock, with a market price well above other types of paper. Collecting cardboard for recycling at LANL involves removing contaminants, flattening boxes, and placing them in industrial cardboard recycling bins next to the normal waste dumpsters at Life Science, Sigma, CMR, and OTOWI. Contaminated cardboard, like pizza boxes, is not acceptable. Some, but not excessive, tape is acceptable, staples are OK. Brown grocery bags are also OK to mix with cardboard.

State Regulated Waste Recycling Options

In FY97 general use vehicles will be serviced off-site. This will result in a significant reduced collection effort for oil, tires, lead acid batteries, and antifreeze. The Laboratory plans to enter into an agreement with the Los Alamos County Landfill to collect these feedstocks at the landfill.

Oil

Used oil is currently collected at the Laboratory's Central Used Oil Aggregation Facility from general use vehicles and machinery. The oil is gathered by Mesa Oil for refinement and/or industrial fuel augmentation.

Tires

All used rubber tires from general use vehicles and other machinery are currently collected and sent to a recycler for reuse in road beds and other surfaces.

Lead acid battery

Used lead acid batteries from general use vehicles are currently sold to a recycler.

Antifreeze

Used antifreeze from general use vehicles is currently collected and recycled on-site.

Other Recycling Activities

Drum redistribution to Bureau of Indian Affairs Drums that do not meet Laboratory or DOT specifications are collected from various sites and redistributed to the Bureau of Indian Affairs.

Redistribution materials

Property-numbered items are sent to Redistribution and Marketing for redistribution around the Laboratory or sale at Public Auction.

Recycle and Reuse of Metals from Radiological Control Areas

Cost-effective alternatives to the disposal of metals, which have been, or are suspected of having been, contaminated with radionuclides are used at LANL. Alternatives include sending contaminated metal to a radioactive metal smelter, decontaminating the metal and releasing it to a commercial recycler, or verifying that the metal is not contaminated and sending it to a commercial recycler

Environmental Stewardship Program's 'Call for Success'

As the growth of the Environmental Stewardship spreads to all aspects of our Laboratory, the publishing of successful efforts of our employees is a critical priority. The **Pollution Prevention Reporter** readers want to know what are we doing to reduce waste production, where have we found ways to eliminate waste (hazardous, radioactive, or environmentally unfriendly) in our routine efforts to produce 'first time' and 'one-of-a-kind' research driven solutions.

In brief, the **Pollution Prevention Reporter** is an avenue for your success to be published at no cost to a Lab organization and it's readership would surprise you.

Let us publish your success!

Employees recognized for waste minimization plans by Ternel Martinez

Several Laboratory employees received cash awards for their waste minimization plans, programs and ideas during a ceremony Friday, November 1, 1996 in the Physics Building Auditorium as part of the fourth annual Waste Minimization Awards Program.

The program, sponsored by Environmental Management, recognizes individuals who come up with ways for reducing or eliminating any waste form generated from Lab operations.

There are three waste minimization categories: administrative, small-scale and large-scale. Depending on the number of submissions for each category, first, second and third place awards were given this year.

Nominees were evaluated on five criteria: originality, resource benefit, implementation cost, feasibility, and impact on pollution prevention. Tom Nolen of the Environmental Stewardship Office chaired the eight-judge



panel that reviewed submissions and sent its list of recommended winners to EM Program Director Tom Baca, who approved it. Money for the awards came from specially allocated congressional funds administered through the Human Resources (HR) Division.

Lab Deputy Director Jim Jackson presented the awards. Also present were Environmental Stewardship Manager Tom Starke, EM Deputy Program Director Reed Jensen and Tom Nolen.

"Your contribution is extremely important to what the Lab is trying to accomplish in environmental stewardship," said Starke. The goal of environmental stewardship, he said, is to reduce waste and its costs to the point where as little money as possible is used for waste management, meaning more money is available for R&D and operations.

"Environmentalism is here. A lot of people believe in it," said Jensen. "And if we can show that the Lab is doing business in an environmentally responsible manner, that gives us a competitive edge over the other laboratories. Our hope is that the Lab does more than what rules and regulations call for, because that sets us on a higher plane."

The following are the winners and a description of their proposal.

Administrative category

First Place:

Dennis Carathers, Robert Garcia, Steven Ortiz and Peter Velarde of Weapon Materials and Manufacturing (ESA-WMM); and Johnny Martinez and Mary Martinez of Facility Management (ESA-FM), "Lead Recycling" The team came up with a process for reducing the amount of lead it uses for its operations by 50,000 pounds. The team also was able to remove enough contaminants from the lead it does use to allow 99 percent of it to be recycled, saving more than \$56,000 in disposal costs. Each employee received \$50.

Second Place:

Dennis Carathers, Diana Armijo, Charles Brehm, Robert Garcia, Douglas Hemphill, Humberto Martinez, Arsenio Montaño, Barton Olinger, Roger Osantowski, Roger Platt, Thomas Reecer, Steven Rivera and Cynthia Sandoval of ESA-WMM; Stephen Fresquez and David Montoya of Measurement Technology (ESA-MT); and Mary Martinez and Bill McCormick of ESA-FM, "Waste Segregation" — Historically, non-hazardous trash from 19 buildings at Technical Area 16 was treated as 'suspect' contaminated with high explosives, requiring "flashing" to reduce it to ash before being disposed of at Technical Area 54. By incorporating "knowledge of process," contamination of administrative trash was prevented. Thus, uncontaminated trash was removed from the buildings without contact with high explosive material, saving \$60,000 a year in paperwork, personnel cost, packaging and transportation expenses. Each employee received \$50.

Small-scale category

First Place:

Joseph Gonzales of Facility Operations/CMR (CST-26), "Upgrades Recycling" — Gonzales reduced the amount of low-level, low-level mixed and transuranic waste sent to the Radioactive Waste Facility by separating and recycling upgrade waste (low-level waste that can be recycled and made into other products) such as fluorescent bulbs, electrical conduits and copper from various sources. His efforts saved more than \$1.75 million in disposal costs. Gonzales received \$2,000.

Large-scale category

First Place:

Richard Carlson, Steve Birdsell, Scott Williams, Richard Wilhelm, Wally Harbin, Steven Cole, Byron Denny, Stan Bennett, Robert Sherman, Joe Romero, Jerry Romero, Dick Basinger, Leroy Aldrete, George Ortiz, John Moya, Joe Nasise, Helen Sandoval and Gerald Bustos of Tritium Science and

Engineering (ESA-TSE), "Recovery of Tritium from Waste Tritiated Water" — Developed a process for recovering tritium from an abundance of tritiated waste water stored at the Lab. They also determined that it was less expensive to recover the tritium than it was to package, transport and dispose of it. Each employee received \$125.

Second Place:

David Jamriska, Wayne Taylor, Jose Garcia, Virginia Hamilton, Richard Heaton, Dennis Phillips, Carla Lowe, Lisa McCurdy and Martin Ott of Nuclear and Radiochemistry (CST-11), "New Shipping Container to Reduce Waste" — At one time, 55-pound lead liners were required inside all shipping containers used in support of the radioisotope Program at the Los Alamos Neutron Scattering Center. The liners needed to be decontaminated (which created low-level waste) before it could be reused. This proposal showed that 95 percent of the materials being shipped didn't require the lead liner. The elimination of the liner for most shipments reduced waste and shipping and administration overhead costs, and requires less manpower. Each employee received about \$222.

Third Place (tie):

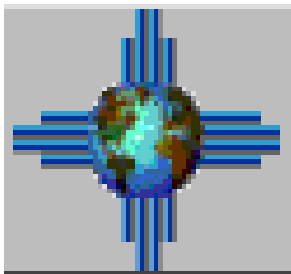
Robert Fresquez, Connie Gomez, Gomer Gray, John Huttenberg, Dave Kachelmeier, Manuel Lujan, Robert Medina, Derrick Montoya, Roger Tennant, Thomas Turner and Gerald Vasilik of Detonation Science and Technology (DX-1), "Printed Circuit Shop Waste Reduction and Internal Recycling of Materials" — As the Dynamic Experimentation (DX) Division's Printed Circuit Shop produces circuit boards, chemical waste is created in the form of etchants and strippers. These employees designed a recirculating water system that captures, purifies and reuses final-stage rinse water from the etchant and stripper functions. In addition, noncontact press cooling water used in this process can be disposed of in the sanitary sewer system, thereby eliminating 300,000 gallons of outfall waste a year. The cascade rinse water, which consists



of 3,000 gallons per year of hazardous waste, was eliminated by placing the water into the etchant cesspool to make up for naturally occurring evaporation.

It also was noted that the stage of the cascading rinse water nearest the etchant collects substantial quantities of ferric chloride, so adding the water to the etchant cesspool prolongs the life of the etchant. The new system also reduced the amount of liquid waste generated per year from 303,000 gallons to 350 gallons of spent ferric chloride and 250 gallons of sodium hydroxide. Each employee received about \$91.

Tony Chroninger of Facilities (MST-FAC), "Air Filter Waste Volume Reduction"—The Laboratory has historically used Farr Riga-Flo 15 filters in applications where 95 percent efficiency particulate filters are required. The filter is sold as a fully enclosed unit in a metal housing that is an integral part of the filter. Chroninger's idea called for using a replaceable filter panel system. In the new system, the metal filter housing is permanently installed and only the filter media is replaced. Because the filter housings are not disposed of each time a filter is changed, waste volume, transportation and disposal costs are reduced by 75 percent. In addition, the new filter system reduces energy consumption by 18 percent, and the time between filter changes also is increased. The new filter panels are fabricated with recycled materials. Chroninger received \$1,000.



Environmental Awards Programs Posted on the INTERNET.

Award nomination instructions and forms were transcribed and posted to the Energy Research Pollution Prevention Information Clearinghouse (EPIC) for the White House "Closing the Circle" Environmental Awards and the 1997 DOE Pollution Prevention Awards. Nomination packets and complete information on both programs is available electronically on the INTERNET at <http://epic.er.doe.gov/epic.htm>. Nominations for both programs are due from the field by January 16, 1997. The DOE award winners will be announced as a part of the Earth Day celebration in April 1997. A short newsletter article was provided to DOE This Month and to the DP Pollution Prevention Advisor. (J. Short, EM-77, 3-1387)

Generator Set-Aside Fee Program funds Pollution Prevention Projects by Jim Betschart

The DOE endorsed a pilot Generator Set-Aside Fee Program (GSAF) for the Laboratory as a cost allocation system to encourage waste reduction. DOE designed the program to: (1) provide a financial incentive to reduce waste generation by "taxing" each unit of waste generated, and (2) effect pollution prevention by using the collected "taxes" for P2 projects. Kick off for P2 project proposal preparation began in September with a deadline for submission by October 18, 1996. A Proposal-Selection Evaluation Committee subsequently evaluated and ranked proposals for funds. Tom Baca, the Proposal Selection Authority, selected the top priority projects and awarded funding to the following projects.

Dennis Basile of Chemistry and Metallurgy Research (CMR) Building received funding for his proposal to design, purchase, and use glovebags for acid drain line replacement, thereby reducing the one-time generation of low-level waste by 56 cubic meters and

mixed low-level waste by 8 cubic meters.

Dave McNroy of Environmental Restoration (EM-ER) received funding for the TA-16 Flash Pad modifications. They will convert from wood to propane and combine the operations of the high explosive flash pad with the oil/solvent burn tray into a single location. They will avoid more than 600 pounds per year of hazardous ash and sell 25 metric tons per year of metal as scrap versus the current controlled land filling at Area J.

Diana Hollis of CST-14 received funding to implement a "Green Is Clean" program at TA-55 (Plutonium Facility), TA-48, TA-3 (Chemistry and Metallurgy Research Building, Sigma Building), and TA-53 (LANSC). This project reduces approximately 500 cubic meters per year of low-level waste by segregating non-radioactive waste from low-level waste materials.

Rick Staroski of CST-26 will be receiving funding to assay large non-routine waste items during the upgrade efforts and future laboratory space renovations at Chemistry and Metallurgy Research Building. The project will segregate at the source to reduce low-level waste generation by 40 cubic meters per year by using a mobile detection system.

Michael Palmer of NMT-2 will be receiving funding for a project to reuse leached magnesium oxide (MgO) crucibles as the neutralizing agent in the hydroxide precipitation of chloride effluent streams generated by aqueous chloride processing of plutonium. They will avoid 6 cubic meters per year of TRU waste with this project.



Editor's Soapbox: Re-refined Motor Oil, Why the myth? by Tom Nolen

On December 11th the Department of Energy, Headquarters held a national tele-video conference to discuss outstanding action items affecting Affirmative Procurement resulting from the August 28th quarterly meeting. Among the topics was a discussion of re-refined motor oil. It appears that a myth lives in the mindset of most that re-refined motor oil is an inferior product to that motor oil refined from virgin crude.

Used motor oil is collected at landfills and returned to a (recycle) refinery where it is returned to 'base stock'! No it is not just strained or filtered. It is returned to the same distillation process that 'crude' (raw virgin oil) is. The distillation process (molecular distillation) removes the metal, water, dirt, and additives originally combined in virgin base motor oil. When the light brown clear base oil has been processed it becomes the base uses in the manufacture of oil for motor vehicles. After distillation new additives are added to reduce the friction in motor vehicle engines rendering a final product as good as the virgin crude product. The advantages re-refined motor oil include recycling to save a natural resource, the quality is as good as virgin crude base motor oil, and it costs less.

Among the customers using re-refined motor oil are: Mercedes Benz, Volvo, BMW Racing, Army, Navy, Air Force, U.S. Park Service, Disney, and Coke Cola and more!

Collected motor oil can be used as a fuel to produce energy but that is a one time consumption! Used motor oil can be re-refined and recycled as many times as needed. It is a renewable resource.

You might ask, is re-refined oil as good a product as synthetic oils? According to a recent study, synthetic oils do little to increase the loss of friction

and wear in a vehicle engine over conventional oil. As a lubricant the synthetic may act as a coolant on the bearing surfaces of engines but not any more effectively than crude base or recycled motor oil. Simply, the cost of the synthetic does not offset any gain over use of conventional motor oil that has been recycled.

Take note, re-refined motor oil is not recommended for alternative fuel vehicle use. The compressed natural gas engines require a special lubricant and cannot use re-refined motor oil.

The myth about re-refined oil is false. Re-refined motor oil is every bit as reliable and quality a product as our traditional crude oil based product. It must meet the same criteria to be certified by the American Petroleum Institute (API) ("For Gasoline Engines") as the traditional crude based oil. DOE has distributed Position Papers written by Ford Motor Company, Chrysler Corporation, and General Motors that clearly details use of the Certified Petroleum Institute re-refined motor oil as acceptable for use in new vehicle limited warranty vehicles.

Myth Dispelled!



"We Care!"

GLOSSARY:

Generator Set-Aside Fee (GSAF)
Department of Energy (DOE)
Department of Transportation (DOT)
Decomissioning & Dencamination (D&D)
Environmental Management (EM)
Environmental Restoration (ER)
Environmental Protection Agency (EPA)
Johnson Control Incorp. (JCI)
Los Alamos National Laboratory (LANL)
Research and Development (R&D)
Transuranic Waste (TRU)



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